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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,857	04/12/2004	Norihisa Naganuma	1448.1056	1803
21171	7590	10/03/2005	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			CHANG, AUDREY Y	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EF

Office Action Summary	Application No.		Applicant(s)	
	10/821,857		NAGANUMA ET AL.	
	Examiner		Art Unit	
	Audrey Y. Chang		2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on August 15, 2005, which has been entered into the file.
- By this amendment, the applicant has amended claims 1-3, 6, 9-12 and has newly added claims 13-16.
- Claims 1-16 remain pending in this application.
- The Objections to claims 6 and 9 set forth in the previous Office Action are withdrawn in response to applicant's amendment.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claim 10 is rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 has been amended to include the feature "filter has first and second filter portions with diffraction unit between the first and second filter portions". The specification and the claims fails to teach how could this arrangement will make the filter an "etalon filter". An etalon filter in general has two reflection regions and a *resonant cavity* defined between the reflection region and all of them are placed *along* the direction of the light propagation. Resonance cavity is not a diffraction unit. In order

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for the two filter portions to define a *diffraction* unit, all of these elements have to be placed on the *plane* perpendicular to the direction of the light propagation.

Claim Objections

3. **Claim 6 is objected to because of the following informalities:**

(1). **Claim 1 has been amended** to include a “first and second filter portions” **claim 6 has been amended** to include a “plurality of filter portions” that are confusing since it is not clear how do the “plurality of filter portions” relate to the “first and second filter portions”.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Fukushima (PN. 5,805,759).**

The significant amendments to claims 1, 11, and 12 and the newly addition of claims 13-16 necessitate the new grounds of rejections.

Fukushima teaches an *optical device* that is comprised of an *optical filter* (6, Figures 4, and 7(C)) that is placed in the beam path of a *collimated light beam* (SP). Fukushima teaches that the optical filter comprises a first and a second portions (6D) that in between the two portions there is a *slit* (42) such that the center wavelength of the collimated light beam that passes through the filter is selected and the

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transmittance of the collimated light beam verses the wavelength characteristics changes as a function of the wavelength, (please see Figure 7(D)). Fukushima further teaches that the filter may be moved by a *driver* (32) in a direction that is *perpendicular* to the direction of the collimated light beam, (please see Figures 6-7, column 6, lines 54-55) such that different center of wavelength of the pass-band of the collimated light can be selected as the filter is moved in the direction perpendicular to the collimated light beam, (please see column 9, lines 29-44).

This reference has met all the limitations of the claims with the exception that it does not identify explicitly that the slit is a diffraction unit. However it is known in the art that a single slit having slit width that is *much greater* than the wavelength of the incident light beam will form *single slit diffraction unit* and a maximum diffraction peak or transmittance peak for the selected and diffracted light having the selected wavelength will be formed by this single slit diffraction. Since the Fukushima reference teaches that the wavelength interest is in the range of 1.5 microns, and the slits are of the macroscopic size this means it is implicitly true that the slit (42) does form a single slit diffraction unit and the transmittance of the light beam as shown in Figure 7(D) is a maximum diffraction peak. It is also obvious to one skilled in the art, if the slit is not of the size, to make the slit to have the size capable of making single slit diffraction unit for the benefit of making the transmittance filter via the slit of **Fukushima** utilizing diffraction theory to maximize the transmittance peak for the pass-band of the collimated light beam.

With regard to claim 2, Fukushima teaches that the first and second filter portions are formed by plates (6D), although this reference does not teach explicitly that the portions are made by film, however since the same function, namely making these portions filter portions, is the same to make them by film or plates would have been obvious variations to one skilled in the art for the benefit of making the filter fits the specific design requirement.

With regard to claims 3-5 and 15-16, Fukushima teaches that a plurality of the optical filters (6, Figure 9) may be used wherein each of the optical filters is individually driven by the driver to move in

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the direction perpendicular to the direction of the collimated light beam. Fukushima teaches that each of the plurality of optical attenuation filters has specific slit patterns (please see Figures 5-7) and they are driven to provide specific transmittance characteristics, (please see Figures 10). The slits for different filters are implicitly arranged at certain angle with respect to each other since even if they are parallel to each other they are at angle zero with respect to each other.

With regard to claims 6 and 14, Fukushima teaches that the light attenuation filter region lines (ETL) with certain pitch as relative to the beam spot size (SP) is set to be less than one quarter of the beam spot size, (please see Figures 5-6). It would then have been obvious to make the grating structure of the attenuation optical filter with edges to have the pitch to be less than a quarter of the beam size for the benefit of enabling the attenuation filter to provide desired wavelength transmittance pattern. **Claim 6 has been amended** to include the feature that the filter has a plurality of filter regions and slits. Although this reference does not teach such explicitly, such modification would have been obvious to one skilled in the art, for it only involves duplicating part of the slits, for the benefit of making the filter capable of having different pass-band transmittance characteristics to obtain transmitted light beam with different wavelength characteristics.

With regard to claim 7, this reference does not teach explicitly that the driver is the types of driver claimed however these claimed drivers are all well known standard drivers in the art to use one of them would have been obvious modification to one skilled in the art for the benefit of effectively moving the optical filter as desired.

With regard to claim 8, it is implicitly true the different arrangements of the edges and slits for the attenuation optical filters result different wavelength characteristics.

With regard to claim 9, Fukushima teaches that the filter portion essentially has zero transmittance but it does not teach explicitly if they are reflection or not. However such modification

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does not change the function of the slit, which essentially provides transmitted diffraction beam. Furthermore, it is implicitly true that zero transmission can include non-zero reflection of the incident light and the reflection of the collimated light will be in the direction parallel to the collimation direction, by the principle of reflection.

With regard to claim 10, this reference does not teach explicitly that the filter is an etalon filter, however the features concerning the filter portions and the slit will NOT make an etalon filter so this feature cannot really be examined here.

Response to Amendment

6. Applicant's arguments with respect to amended claims 1-12 and newly added claims 13-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent issued to Pryor (PN. 3,664,739) discloses typical single slit diffraction phenomenon.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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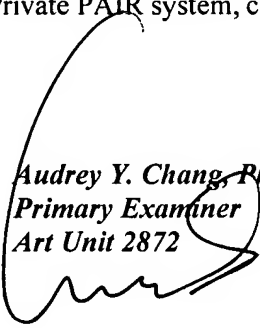
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.